European Commission

SOLAR ENERGY

INNOVATION FUND

Deploying innovative net-zero technologies for climate neutrality

AGRIVOLTAIC CANOPY: The Brouchy Agrivoltaic Canopy – An acceleration toward energy transition

The Innovation Fund is 100% funded by the EU Emissions Trading System

| Project Factsheet

The Brouchy project will be an innovative agrivoltaic canopy to answer the critical dual need of the agricultural and energy sectors. The project aims to enhance agricultural production and develop new renewable energy capacities. Its breakthrough technical feature is a 5-metre-high shade house structure on steel cables, held in place by poles with a width of 27 metres, making it suitable for large field crops. The canopy's versatility will expand the market potential of agrivoltaics at a large scale, contributing to the decarbonisation of the energy mix and improve food security as it delivers 100% relative greenhouse gas emission reduction compared to the reference scenario.

Due to size limitations, existing agrivoltaic solutions only target market gardening, viticulture, arboriculture or livestock. For the canopy targeting large field crops, technical structural resistance was the biggest challenge for this wide cable structure. The project's innovative characteristics include an independent control of each row of photovoltaic

COORDINATOR
TSE

LOCATION
France

CATEGORY
Renewable Energy (RES)

SECTOR
Solar energy

AMOUNT OF INNOVATION FUND GRANT
EUR 2,756,167

EXPECTED GHG EMISSIONS AVOIDANCE
6,723 tonnes CO2 equivalent

STARTING DATE
01 September, 2022

ENTRY INTO OPERATION DATE
31 December, 2023

FINANCIAL CLOSE DATE
30 June, 2023

** Calculated vs. the 2021-2025 ETS benchmark of 6.84 tCO2e/tH2, not taking into account additional carbon abatement due to substitution effects in the H2 end use application, i.e. conservative estimate.*

panels, which limits the effects of wind vibrations. The 2.9 megawatt-peak (MWp) canopy has a steel structure lighter than existing solutions and a limited ground footprint. With a height of 5 metres and a width of 27 metres, the system allows the normal working habits of the farmers to continue, including the use of any agricultural machinery. The project aims to avoid 6 982 tonnes of CO2 equivalent of greenhouse gas emissions during the first 10 years of operation.

A large range of plant species is compatible with the set-up and the innovative technology can be adapted to offer more flexibility to the farmer's field management. Using a significant number of sensors, an automatic computer-controlled system will allow the state-of-the art panels to be oriented according to weather forecasts. This will allow the system to meet the specific needs of the crops whilst optimising energy production.

Thanks to the partial and rotating shade that is provided by the canopy, the shading system will help to protect the crops against climate change and to reduce thermal, hydric and cold stress. The decrease in temperature resulting from the canopy will have a positive effect on photosynthetic activity. The objectives of the project are to quantify and analyse the improved plant yield and food quality as well as the decreased need for irrigation. The canopy can also be equipped with an intelligent irrigation system, to address a major challenge of water availability by providing optimal irrigation when necessary. The use of a tracking system with bifacial modules (capable of absorbing sunlight from the front and back) combined with the albedo effect (the ability of surfaces to reflect sunlight) will optimise the energy yield of the panels.

The project aims to create a new versatile solution, that enables the development of the emerging agrivoltaics market on a large scale. Developing new renewable energy sources such as these will contribute to the decarbonisation of the European energy mix, which is currently dependent on fossil fuels.

The project will bring direct economic benefits to farmers through improved profitability and additional revenue and to the communities through taxation. Finally, biodiversity is at the heart of the project and the canopy has been designed to ensure landscape integration in harmony with the environment and local species with multi-layered hedges.

| Participants

BROUCHY PV	France
TSE	France